Three recurrent episodes of apical-ballooning takotsubo cardiomyopathy in a man

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Abstract: A 66-year-old man was admitted to the emergency room because of 3-hour-long acute chest pain with dyspnea and nausea while fishing on a high-altitude (2400 m) lake in the very early morning. The patient was transferred by helicopter. Persistent chest pain without pathological clinical findings (Spo2, 99%; shock index, 0.9; axillary temperature, 36.7°C) was present. Medical history revealed no previous cardiovascular events and no further cardiovascular risk factors except smoking (40 packs a year). ECG demonstrated ST-segment elevation (Figure 1A). ST-segment–elevation acute coronary syndrome was initially suspected. Immediate selective coronary angiography demonstrated neither stenosis nor dissections. Ventriculography showed extensive left ventricular (LV) apical and midventricular akinesia with hyperkinesia in the basal segments and a moderate reduction in the estimated LV ejection fraction (Figure 1B and Movie I in the online-only Data Supplement). These large LV wall motion abnormalities were inconsistent with slightly elevated cardiac enzymes (troponin I, 0.48 g/L [normal, <0.09 g/L]; creatine kinase-MB, 18.7 UI/L [normal, <24 UI/L]). Clinical presentation and the absence of elevation of inflammation markers elevation and pathological viral tests and bacterial cultures made it possible to reasonably exclude acute myocarditis. ECG repolarization alteration (Figure 1C) and LV wall motion abnormalities recovered spontaneously and fully in 4 days (Figure 1D and Movie II in the online-only Data Supplement). Therefore, the diagnosis of apical-ballooning takotsubo cardiomyopathy (TTC) was made.

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Three recurrent episodes of apical-ballooning Tako-Tsubo cardiomyopathy in a man.

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A 66-year old man was admitted to the emergency room (ER) because of a 3-hours lasting acute chest pain with dyspnoea and nausea, while fishing on a high-altitude lake (2400 meters) in the very early morning. The patient was transferred by helicopter. Persistent chest pain, without pathological clinical findings (SpO2 99%, shock index = 0.9, axillary temperature 36.7°C) were present. Medical history revealed no previous cardiovascular (CV) events and no further CV risk factors except from smoking (40 packs/year). ECG demonstrated ST-segment elevation as depicted (Figure 1A). ST-segment elevation acute coronary syndrome was firstly suspected. Immediate selective coronary angiography demonstrated neither stenosis nor dissections. Ventriculography showed extensive left ventricle (LV) apical and mid-ventricular akinesia with basal segments hyperkinesia and moderate reduction in the estimated LV ejection fraction. (Figure 1B - Online video 1). These large LV wall motion abnormalities (LVWMA) were inconsistent with slightly elevated cardiac enzymes: troponin I 0.48 mcg/L (nv < 0.09) and CK-mb 18.7 UI/L (nv < 24). Clinical presentation and the absence of inflammation markers elevation and of pathological viral tests and bacterial cultures, made it possible to reasonably exclude acute myocarditis. ECG repolarization alteration (Figure 1C) as well as LVWMA spontaneously and fully recovered in four days (Figure 1D - Online video 2). Therefore, the diagnosis of apical-ballooning Tako-Tsubo cardiomyopathy (TTC) was retained.

One year later, the patient, who incidentally stopped smoking after the TTC episodes, was admitted to the ER of another hospital because of acute chest pain. No precipitating episode was identified. ECG (Figure 2A), troponin I, blood samples, TTE, selective coronary angiography and LVV (Figure-2B - Online video 3) displayed findings comparable to the previous episode. Furthermore, exclusion of late gadolinium-enhancement on magnetic resonance imaging, made it possible to exclude myocarditis. ECG repolarization alteration (Figure 2C) fully and spontaneously recovered. Four weeks after admission TTE demonstrated full recovery of the LVWMA (Figure 2D - Online video 4), consistent with a diagnosis of a recurrent TTC.

Two years later the patient was admitted again to the ER of a small district hospital because of acute chest pain and dyspnoea, while fishing on a lake in a cold morning. ECG showed T-wave inversion in inferior leads and precordial v3-v6 leads (Figure 3A). The patient was transferred to primary-PCI capable centre, where TTE, selective coronary angiography and LVV (Figure 3B - Online video 5) were comparable to that of the two preceding episodes (troponin I 4.06 mcg/L; CK-mb 38 UI/L). ECG repolarization alteration

(Figure 3C) fully and spontaneous recovered, LVWMA spontaneously and completely recovered within one week (Figure 3D- Online video 6). Therefore, the diagnosis of a third typical TTC episode was confirmed. Normal 24-hour urine fractionated catecholamines and metanephrines and absence of hypertension made it improbable pheochromocytoma diagnosis as a cause of these three TTC episodes.

TTC is an infrequent mostly stress-related disease, mainly affecting post-menopausal women. Even rarer are recurrences (1.5 to 2.9% per year) (1, 2), mostly occurring in menopausal woman and frequently with different LV wall-motion abnormalities pattern (3, 4). To our knowledge, this is the first reported case of three episodes of recurrent typical apical-ballooning Tako-Tsubo cardiomyopathy in adult men. Moreover, this case underscores that both invasive ventriculography and transthoracic echocardiography may be and should implemented to consent a correct diagnosis and follow-up.

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Figures legend.

Figure 1. (A) ECG showing ST-tract elevation in precordial leads; (B) Ventriculography (longitudinal view, end-systole) illustrates extensive LV apical and mid-ventricular akinesia (arrows) with basal segments hyperkinesia and moderately reduced LVEF% (Online video 1); (C) ECG shows spontaneously normalized repolarization within four days and left anterior fascicular block; (D) TTE (4-chamber view, end-systole) shows fully recovered LVWMA with normal EF% within four days (Online video 2).

Figure 2. (A) ECG showing T-wave inversion in inferior leads and precordial v3-v6 leads; (B) Ventriculography (longitudinal view, end-systole) proves extensive LV apical and mid-ventricular akinesia (arrows) with basal segments hyperkinesia and moderately reduced LVEF% (Online video 3); (C) ECG shows spontaneously normalized repolarization within one day and left anterior fascicular block; (D) TTE (2-chamber view, end-systole) shows fully reversible LVWMA with normal EF% within four weeks (Online video 4).

Figure 3. (A) ECG showing T-wave inversion in inferior leads and precordial v4-v6 leads; (B) TTE (4-chamber view, end-systole) shows extensive LV apical akinesia and mid-ventricular hypokinesia (arrows) (Online video 5); (C) ECG shows spontaneously normalized repolarization within two days and left anterior fascicular block; (D) TTE (4-chamber view, end-systole) demonstrates fully recovered LVWMA with normal EF% within one week (Online video 6).